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The perfume maker in Dubai Gold Souq who can create any fragrance - https://www.youtube.com/watch?v=5WIu0FxpyPw Scent and Chemistry The Molecular World of Odors - Günther Ohloff, Wilhelm Pickenhagen, Philip Kraft and Fanny Grau https://www.amazon.com/Scent-Chemistry-Molecular-World-Odors/dp/3527348557

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A treatise on the analytical geometry of the point, line, circle, and conic sections, containing an account of its most recent extensions, with numerous examples - John Casey - https://archive.org/details/cu31924001520455
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https://www.math.arizona.edu/~agillette/research/ccomOct11.pdf

Generalized Barycentric Coordinates in Computer Graphics and Computational Mechanics - Kai Hormann and N. Sukumar https://www.amazon.com/Generalized-Barycentric-Coordinates-Computational-Mechanics/dp/1498763596

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http://www.numdam.org/item/RHM 1998 4 2 163 0.pdf (tetrapolar coordinates)

Mémoire sur la Relation qui existe entre les distances respectives de cinq points quelconques dans l'espace,

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 $A \ hedronometric \ theorem \ of \ Menger - \ \underline{https://vdocuments.site/a-hedronometric-theorem-of-menger-day-late-d-a-hedronometric-theorem.html?page=1$

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 $The \ Descartes \ Rule \ of \ Sweeps-\underline{https://paperzz.com/doc/8687034/the-descartes-rule-of-sweeps-and-the-descartes-signature}$

https://demonstrations.wolfram.com/DescartesSignatureExplorer/

Pseudofaces of tetrahedra - https://paperzz.com/doc/8457999/pseudofaces-of-tetrahedra-the-law-of-cosines-for

 $Motivation\ for\ spectral\ graph\ theory\ -\ \underline{https://9to5science.com/motivation-for-spectral-graph-theory}$

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https://www.maths.unsw.edu.au/sites/default/files/3dgeom_zome_tetrahedron_seminar.pdf

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Cubic Pythagoras – Luis Teia (pythagoras with cubes instead of squares)

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https://web.archive.org/web/20170922045632/http://www.ccsenet.org/journal/index.php/jmr/article/viewFile/64646/34833

Fermat's Theorem – a Geometrical View

https://www.researchgate.net/profile/Luis-Teia/publication/312607399 Fermat's Theorem - a Geometrical View/links/58863f6d92851c21ff4d5825/Fermats-Theorem-a-Geometrical-View.pdf

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Extended Pythagoras Theorem Using Hexagons - Luis Teia

https://www.researchgate.net/publication/356441337 Extended Pythagoras Theorem Using Hexagons

 $Extended\ Pythagoras Theorem\ using\ Triangles, and\ its\ Applications\ to\ Engineering\ -\ Luis\ Teia$

https://www.researchgate.net/publication/

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The Eutrigon Theorem - a new* twin to the theorem of Pythagoras

https://www.principlesofnature.com/number geometry connections/new angles on triangles and theorems the eutrigon theorem.htm

Is the dominance of right triangles and squares justified from a scale structure perspective?

https://www.principlesofnature.com/number geometry connections/reassessing the dominance of right triangles and squares in geometry.htm

Duocode, a parallel of the unicode standard for hexagonal typesetting - Alexander Egorov

Hex Grid Geometry for Game Developers - Herman Tulleken - http://gamelogic.co.za/downloads/HexMath2.pdf

'Tetrahedral' coordinates in space (generalization of hexagonal coordinates)

https://math.stackexchange.com/questions/1861635/tetrahedral-coordinates-in-space-generalization-of-hexagonal-coordinates

Topology Optimization with Tetra-kai-decahedra and Spheroidal Masks - Nikhil Singh and Anupam Saxena

https://www.researchgate.net/publication/358345870_Topology_Optimization_with_Tetra-kai-decahedra_and_Spheroidal_Masks

An Argument For Dozenalism - https://hexnet.org/content/argument-dozenalism

https://hexagon.link/ && https://hexagontruth.github.io/hexular/ && https://twitter.com/hexagonalnews

Hexagonal Awareness - https://www.youtube.com/channel/UCf-ml0bmw7OJZHZCIB0cx3g/videos

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https://www.researchgate.net/publication/270597014 Polynumbers Norms Metrics and Polyingles

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Wildberger 's channel - https://www.youtube.com/user/njwildberger

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Introduction to the General Trigonometry in Euclidian 2D-space - Claude Ziad Bayeh http://www.wseas.us/e-library/transactions/mathematics/2012/53-882.pdf

On the art of threesomes - L. Jan Torres - https://archive.org/details/on the art of threesomes

Plimpton 322 is Babylonian exact sexagesimal trigonometry - Daniel Francis Mansfield and Norman Wildberger https://www.researchgate.net/publication/319286288 Plimpton 322 is Babylonian exact sexagesimal trigonometry Old Babylonian mathematics and Plimpton 322: A new understanding of the OB tablet Plimpton 322 https://www.youtube.com/watch?v=L24GzTaOll0

 $How \ Does \ One \ Cut \ a \ Triangle? - Alexander \ Soifer - \underline{https://www.amazon.com/How-Does-One-Cut-Triangle/dp/0387746501}$

Thomas Harriot's Doctrine of Triangular Numbers: the 'Magisteria Magna' - Janet Beery and Jacqueline Stedall https://www.amazon.com/Thomas-Harriots-Doctrine-Triangular-Numbers/dp/3037190590

(9) SOFTWARE ZONE

DATA STRUCTURES*

Treesheet (tree-like spreadsheet) - http://strlen.com/treesheets/

Blockchain (demo) - https://andersbrownworth.com/blockchain/

Heimer (mind map) - https://github.com/juzzlin/Heimer

Orca (procedural sequencers) - https://github.com/Hundredrabbits/Orca

Taichi (spatially sparse multi-level data structures) - https://github.com/taichi-dev/taichi

Rasdaman (datacube and arrays) - http://www.rasdaman.org/wiki

Categorical Data (data-related tasks using category theory) - https://www.categoricaldata.net/

Enso (diagrammatic coding) - https://enso.org/language

Egison (efficient non-linear pattern matching with backtracking for non-free data type) - https://www.egison.org/

Eve (uniform data-processing) - http://witheve.com/

Habit (type-level programming) - https://www.habit-lang.org/

Fluidinfo (columnar shareable data) - https://github.com/fluidinfo && https://en.wikipedia.org/wiki/Fluidinfo

MentDB (world wide Data) - https://www.mentdb.org/mentdb_weak.html

Obsidian (knowledge base on top of your local folder of plain text files) - https://obsidian.md/

LMQL (query language for large language models) - https://github.com/eth-sri/lmql

Koka (effect typing, effect handlers, Perceus memory management) - https://koka-lang.github.io/koka/doc/book.html#why

NewLang (computing tensors and rational numbers) - https://github.com/rsashka/newlang

Odin (data-oriented programming)- https://odin-lang.org/

Cairo (provable programs and nondeterministic jumps) - https://www.cairo-lang.org/docs/how_cairo_works/cairo_intro.html

Exo (exocompilation) - https://exo-lang.dev/

Primecoin - https://en.wikipedia.org/wiki/Primecoin && https://primecoin.io/

STRUCTS* WITH META

Bedrock (meta-distro) https://bedrocklinux.org/

Funtoo (meta-distro) - https://www.funtoo.org/Welcome

T2 System Development Environment (meta-distro) - https://t2sde.org/index.cgi/

 $DL\ Linux\ (meta-meta-distro)- \ \underline{https://web.archive.org/web/20181221164035/https://www.sudosatirical.com/articles/dl-linux-0-0-1-released/linux-0-0-1-r$

Black (reflective) - http://pllab.is.ocha.ac.jp/~asai/Black/

Terra (meta-programming) - http://terralang.org/

 $MetaL\ (meta-language) - \underline{https://www.meta-language.net/faq.html\#what}$

Rinci (metadata specifications) - https://metacpan.org/pod/Rinci#ABSTRACT

Circle (meta-programming) - https://www.circle-lang.org/

Hackett (meta-programming) - https://lexi-lambda.github.io/hackett/

Elena (polymorphic code) - https://github.com/ELENA-LANG/elena-lang/wiki/ELENA-Programming-Manual#overview

 $Beluga\ (mechanizing\ meta-theory) - \underline{https://www.cs.mcgill.ca/\sim\!complogic/beluga/index.html}$

Hazel (incomplete programs) - https://hazel.org/

Autohotkey (gui and scripting automation for windows) - https://www.autohotkey.com/

Rosie Pattern (beyond regex) - https://rosie-lang.org/about/

Antipurity (self-aware interpreter) - https://github.com/Antipurity/conceptual

Multicompiler (defensive compiler) - https://immunant.com/blog/2018/09/multicompiler/

Avail (articulate programming) - https://www.availlang.org/about-avail/introduction/index.html

 $Push \ (evolutionary \ computing) \ - \ \underline{https://faculty.hampshire.edu/lspector/push.html}$

Wyvern (built-in skill for large-scale design) - https://wyvernlang.github.io/

Gen (probabilistic) - https://probcomp.github.io/Gen/

Pyro (probabilistic) - https://pyro.ai/

Rascal (meta-programming) - https://www.rascal-mpl.org/

Pharo (software as objects, inmersive) - https://pharo.org/features

DarklangGPT (Deployless cloud backends with AI-generated code) - https://darklang.com/

LangChain (simplify APP construction with LLMs) - https://langchain.com/

Scallop (neurosymbolic programming) - https://scallop-lang.github.io/

Mojo (AI oriented) - https://docs.modular.com/mojo/why-mojo.html

SOUND*

Gwion - https://gwion.github.io/Gwion/

Kronos vesaronilo - http://kronos.vesanorilo.com/

Supercollider - https://supercollider.github.io/

Faust - https://faust.grame.fr/

Chuck - http://chuck.cs.princeton.edu/

NETWORKING*

Live Raizo (network simulation) - https://sourceforge.net/projects/live-raizo/

P4 (implement specific network behaviours) - https://p4.org/

Helena (browsing automation) - https://helena-lang.org/

Volunia (rpg-like browser) http://www.volunia.com/

Gather (rpg-like meetings) - https://www.gather.town/

Lynx (textual browser) - https://en.wikipedia.org/wiki/Lynx (web browser)

Beaker Browser (peer-to-peer Web browser) - https://beakerbrowser.com/

Nyxt browser (keyboard-driven browser) - https://github.com/atlas-engineer/next

Jolie (microservices) - https://www.jolie-lang.org/

Daphile (headless music server) - https://www.daphile.com/

Skywave linux (software defined radio servers) - https://skywavelinux.com/

Gotenna (off-grid mobile mesh) - https://gotenna.com/

Manyverse (off-grid social networking) - https://www.manyver.se/faq/what-is-manyverse

p2p networking - https://zeronet.io/ https://seronet.io/ https://seronet.io/ https://seronet.io/ https://seronet.io/ https://seronet.io/ https://seronet.io/ https://seronet.org/en/ <a

Eternal-september private news server (usenet) - http://eternal-september.org/

Aioe.org public news server (usenet) - https://news.aioe.org/

What is the Usenet improvement Project? - http://twovoyagers.com/improve-usenet.org/

Fediverse (federated servers for web-publishing) - https://en.wikipedia.org/wiki/Fediverse

Assemblyscript (a TypeScript-like language for WebAssembly) - https://www.assemblyscript.org/

Buzz (swarms robotics) - https://github.com/buzz-lang/Buzz && https://the.swarming.buzz/wiki/doku.php

Wing (entire cloud as the computer) - https://github.com/winglang/wing

OPERATING SYSTEM*

XOD.IO (microcontrollers) - https://xod.io/

Elemental Processor SIMulator - https://wepsim.github.io/

Mikrocodesimulator MikroSim 2010 (microcode) - http://www.mikrocodesimulator.de/index_eng.php

Katai Struct (binary data structures) - https://kaitai.io/

Snowdrop OS (16-Bit Operating System) - http://sebastianmihai.com/snowdrop/

Turbo Rascal (design of 8-bit/16-bit games)- https://lemonspawn.com/turbo-rascal-syntax-error-expected-but-begin/

NESFab (creating NES games) - https://pubby.games/nesfab.html

Tunguska (a ternary computer emulator) - Viktor Lofgren - http://tunguska.sourceforge.net/

The Trillium Architecture - Douglas W. Jones - http://homepage.divms.uiowa.edu/~jones/ternary/trillium.shtml

Red (full-stack) - https://www.red-lang.org/p/about.html

Racket - https://racket-lang.org/ && Neverlang - https://cazzola.di.unimi.it/neverlang2.html (language creation)

Rescatux - https://www.supergrubdisk.org/rescatux/ && Parted Magic - https://partedmagic.com/ (OSes for rescue and recovery)

Minix - https://www.minix3.org/ && 'An Open Letter to Intel' - https://www.cs.vu.nl/~ast/intel/

Los Procesadores Intel tienen un Secreto Misterio - https://www.youtube.com/watch?v=CaLb7waR6eo

Debian-hurd (debian over Hurd) - https://en.wikipedia.org/wiki/GNU_Hurd

Trisquel (ubuntu over Libre-Linux) - https://trisquel.info/

Noulith (attempt to give myself a new Pareto-optimal choice for quick-and-dirty scripts) - https://github.com/betaveros/noulith

Ratpoison (Window Manager) - https://www.nongnu.org/ratpoison/

IceWM (Window Manager) - https://ice-wm.org/

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Quorum (evidence-oriented) - https://quorumlanguage.com/reference.html

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Threejs (creation of 3D content) - https://threejs.org/manual/#en/fundamentals

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The End of Mental Illness: How Neuroscience Is Transforming Psychiatry - Daniel G. Amen https://www.amazon.com/End-Mental-Illness-Neuroscience-Transforming/dp/1496438159
The most important lesson from 83,000 brain scans - https://www.youtube.com/watch?v=esPRsT-lmw8

Surfaces and Essences: Analogy as the Fuel and Fire of Thinking - Douglas R. Hofstadter https://www.amazon.com/gp/product/B00BE65086/ref=dbs a def rwt hsch vapi tkin p1 i2

Aproximate number system - https://en.wikipedia.org/wiki/Approximate number system

Numerical cognition - https://en.wikipedia.org/wiki/Numerical cognition

Number sense in animals - https://en.wikipedia.org/wiki/Number sense in animals

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Innumeracy - https://en.wikipedia.org/wiki/Innumeracy %28book%29

Hypernumeracy - https://en.wikipedia.org/wiki/Innumeracy %28book%29

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Multistable perception - https://en.wikipedia.org/wiki/Multistable_perception
https://web.archive.org/web/20220627191031/https://shupliak.art/gallery/hidden-images/four-women
<a href="Percepting Geometry Geometrical Illusions Explained by Natural Scene Statistics - Catherine Q. Howe and Dale Purves https://www.amazon.com/Perceiving-Geometry-Geometrical-Illusions-Statistics/dp/0387254870
Visual Thought Thought-depictive-perception - Liliana Albertazzi
https://www.amazon.com/Visual-Thought-depictive-perception-Consciousness/dp/9027252033

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Retrain Your Business Brain Outsmart the Corporate Competition - Donalee Markus, Lindsey Markus and Pat Taylor $\frac{\text{https://www.amazon.com/Retrain-Your-Business-Brain-Competition/dp/079317015X}{\text{https://www.amazon.com/Retrain-Your-Business-Brain-Competition/dp/079317015X}}$

Geometric Etudes in Combinatorial Mathematics (2010) - Alexander Soifer https://www.amazon.com/Geometric-Etudes-Combinatorial-Mathematics-Alexander/dp/0387754695

Geometric Magic Squares: A Challenging New Twist Using Colored Shapes Instead of Numbers - Lee C.F. Sallows https://www.amazon.com/Geometric-Magic-Squares-Challenging-Recreational-ebook/dp/B00GEA9QCS

Ahmes' Legacy Puzzles and the Mathematical Mind - Marcel Danesi https://www.amazon.com/Ahmes-Legacy-Puzzles-Mathematical-Mathematics/dp/3319932535

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Generalized inverse - https://en.wikipedia.org/wiki/Generalized_inverse

Permanent - https://en.wikipedia.org/wiki/Permanent (mathematics)

Drazin inverse - https://en.wikipedia.org/wiki/Drazin inverse

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Hyperdeterminant - https://en.wikipedia.org/wiki/Hyperdeterminant

Puzzles Wiki - https://www.puzzles.wiki/wiki/Main_Page

Theory of holors - Parry Moon and Domina Eberle Spencer https://www.amazon.com/Theory-Holors-Generalization-Moon-Spencer/dp/0521019001

Orthogonal Latin Squares Based on Groups - Anthony B. Evans https://www.amazon.com/Orthogonal-Latin-Squares-Based-Groups/dp/3319944312

Latin Squares and their Applications - A. Donald Keedwell and József Dénes https://www.amazon.com/Latin-Squares-Applications-Donald-Keedwell/dp/0444635556

(24) LISTS OF OPEN PROBLEMS

Darpa 23 Maths Problems - https://compmath.wordpress.com/about/10-the-big-picture-darpas-23-challenge-questions/

 $Problems \ of the \ Wolfram \ Project - \underline{https://www.wolframscience.com/openproblems/NKSOpenProblems.pdf \\ \underline{http://mathworld.wolfram.com/UnsolvedProblems.html}$

Open problems in Mathematics - John Forbes Nash Jr and Michael Rassias http://www.mthrassias.com/data/uploads/bfm3a978-3-319-32162-22f1.pdf

Worlds to Die Harder For Open Oracle Questions for the 21st Century - Lance Fortnow https://lance.fortnow.com/papers/files/open-oracle-survey.pdf
People, Problems, and Proofs - Richard J. Lipton and Kenneth W. Regan https://www.amazon.com/People-Problems-Proofs-Essays-G%C3%B6dels/dp/3642414214

Erdös' Problems on Graphs - students of Fan Chung - https://mathweb.ucsd.edu/~erdosproblems/

Open problems in Tetration - https://math.eretrandre.org/tetrationforum/showthread.php?tid=162

Open problems of The geometry junkyard - https://www.ics.uci.edu/~eppstein/junkyard/open.html

A quest for Exactness: machines, algebra and geometry for tractional constructions of differential equations - Pietro Milici $\frac{\text{https://tel.archives-ouvertes.fr/tel-01889365/document}}{\text{(See section "7.3 Open problems and perspectives")}}$

 $100\ Great\ Problems\ of\ Elementary\ Mathematics\ their\ history\ and\ solution\ -\ Heinrich\ Dorrie\ (solved\ problems)\ \\ \underline{https://www.amazon.com/Great-Problems-Elementary-Mathematics-Dover/dp/0486613488}$

Lims 23 Mathematical challenges (London Institute for Mathematical Sciences https://lims.ac.uk/23-mathematical-challenges/











